WHAT IS CLAIMED IS:

1. A polymeric nanocomposite comprising a linear polystyrene resin and having dispersed therein an exfoliated or intercalated multilayered inorganic material, the nanocomposite further comprising a star polymer in which a plurality of styrene-containing arms are connected to a core.

2. A polymeric nanocomposite comprising a star polymer in which a plurality of styrene-containing arms are connected to a core, and having dispersed therein an exfoliated or intercalated multilayered inorganic material.

3. The polymeric nanocomposite of claim 1 or 2 wherein the multilayered inorganic material is substantially exfoliated.

4. A polymeric nanocomposite comprising an exfoliated multilayered inorganic silicate or aluminate, or a mixture thereof; which nanocomposite comprises:

(a) from about 68 to 98 percent by weight, based on the total weight of the nanocomposite, of a linear polystyrene resin having a weight average molecular weight of about 1,000 to 1,000,0000;

(b) from about 1 to 30 percent, based on the total weight of the nanocomposite, of a star polymer having an weight average molecular weight of at least about 10,000, comprising:

(i) a core; and

(ii) attached to the core, a plurality of arms, which arms each, on average, have a molecular weight of about 1,000 to 100,000, each on average comprising 50 to 100% by weight, based on the weight of the arm, of polymerized styrene monomers; and

(c) from about 1 to 10 percent by weight, based on the weight of the total nanocomposite, of exfoliated or intercalated multilayered inorganic material.

5. The nanocomposite of claim 1, 2, or 4, wherein the number of arms on average attached to a core is 3 to 20.

6. The nanocomposite of claim 1, 2, or 4, wherein said molecular weight of the arms on average is 2,000 to 50,000.

7. The nanocomposite of claim 1, 2, or 4, wherein the star polymer comprises less than 10 percent, by total weight of the star polymer, of said core, and 90 to 99%, by total weight of the star polymer, of said arms.

8. The nanocomposite of claim 1, 2 or 4, wherein the core on average has a molecular weight of less than 5,000.

9. The polymer composite of claim 1 or 4 wherein the linear polystyrene resin contains from about 95 to about 100 percent monomeric styrene.

10. The nanocomposite of claim 1 or 4, wherein the nanocomposite further comprises a second polymer blended with the linear polystyrene resin.

11. The nanocomposite of claim 10, wherein said second polymer is poly(phenyleneoxide).

12. The nanocomposite of claim 1 or 2 wherein the multilayered inorganic material is a swellable layered material.

13. The nanocomposite of claim 12 wherein the swellable layered material comprises a silicate.

14. The nanocomposite of claim 13 wherein the silicate is a smectite clay.

15. The nanocomposite of claim 13 wherein the silicate is a montmorillonite, hectorite, saponite, smectite, nontronite, beidellite, volhonskoite, sauconite, magadiite, medmontite, kenyaite, or vermiculite.

16. The nanocomposite of claim 12 wherein the swellable layered material is an organoclay.

17. The nanocomposite of claim 16 wherein the organoclay has been pretreated with cationic organic surfactant.

18. A method of substantially exfoliating a multilayered inorganic material in a polymer matrix comprising a star polystyrene, which method comprises

(a) mixing the multilayered inorganic material with a polymeric composition comprising a star polymer in which a plurality of styrene-containing arms are connected to a core;

(b) heating the mixture to form a flowable polymer melt;

(c) optionally subjecting the mixture to shear ;

(d) cooling the mixture, before or after any optional further processing steps, to obtain a substantially exfoliated material.

19. The method of claim 18, wherein linear polystyrene is mixed with the inorganic material and star polymer at any time prior to cooling the mixture, including after the star polymer is mixed with the inorganic material, before the star polymer is mixed with the inorganic material, and/or the same time as the star polymer is mixed with the inorganic material.

20. The method of claim 18, wherein a material made according to claim 18 without the addition of linear polystyrene, is again heated and mixed with linear polystyrene while maintaining the exfoliation of the inorganic material.

21. The method of claim 19 wherein another polymer material is blended with the linear polystyrene the same time it is mixed with the star polymer and inorganic material or at a different time.

22. The method of claim 21 where said polymer material is poly(phenyleneoxide) or a mixture of poly(phenyleneoxide) and polystyrene.

23. The method of claim 18, further comprising heating the mixture under high-shear mixing.

24. The method of claim 18, wherein the inorganic material comprises a phyllosilicate.

25. The method of claim 24, wherein the phyllosilicate is a smectite clay.

26. The method of claim 25, wherein the smectite clay is sodium montmorillonite.

27. The method of claim 18, wherein the inorganic material is in the form of a powder when mixed.

28. An article of manufacture comprising a body, said body fabricated, totally or in part, from the nanocomposite material of claim 1 or 4.

29. The article of claim 28 in which the article is in the form of a sheet or panel.

30. The article of claim 28 in which the body has been shaped by a molding processing.